SEQUENCE LISTING

<110> Massague et al.

<120> ISOLATED p27 PROTEIN AND METHODS FOR ITS PRODUCTION AND USE

<130> GPCI-P08-079

<140> 09/865018
<141> 2001-05-24

<150> 08/854039
<151> 1997-05-09

<160> 27

<170> PatentIn version 3.1

<210> 1
<211> 597
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)...(597)
<223>

<400> 1

```
atg tca aac gtg cga gtg tct aac ggg agc cct agc ctg gag cgg atg        48
Met Ser Asn Val Arg Val Ser Asn Gly Ser Pro Ser Leu Glu Arg Met
1               5                  10                  15

gac gcc agg cag gcg gag cac cct aag ccc tcg gcc tgc agg aac ctc        96
Asp Ala Arg Gln Ala Glu His Pro Lys Pro Ser Ala Cys Arg Asn Leu
            20                  25                  30

ttc ggc ccg gtg gac cac gaa gag ctg acc cgg gac ttg gag aag cac       144
Phe Gly Pro Val Asp His Glu Glu Leu Thr Arg Asp Leu Glu Lys His
        35                  40                  45

tgc cga gac atg gaa gag gcg agt cag cgc aag tgg aat ttc gat ttt       192
Cys Arg Asp Met Glu Glu Ala Ser Gln Arg Lys Trp Asn Phe Asp Phe
    50                  55                  60

cag aat cac aaa ccc ctg gag ggt aag tac gag tgg cag gag gtg gag       240
Gln Asn His Lys Pro Leu Glu Gly Lys Tyr Glu Trp Gln Glu Val Glu
65                  70                  75                  80

aag ggc agc ttg ccc gag ttc tac tac aga ccc ccg cgg ccc ccc aaa       288
Lys Gly Ser Leu Pro Glu Phe Tyr Tyr Arg Pro Pro Arg Pro Pro Lys
                85                  90                  95

ggt gcc tgc aag gtg ccg gcg cag gag agc cag gat gtc agc ggg agc       336
Gly Ala Cys Lys Val Pro Ala Gln Glu Ser Gln Asp Val Ser Gly Ser
            100                 105                 110

cgc ccg gcg gcg ccc tta att ggg gct ccg gct aac tct gag gac acg       384
Arg Pro Ala Ala Pro Leu Ile Gly Ala Pro Ala Asn Ser Glu Asp Thr
```

```
      115                 120                 125

cat ttg gtg gac cca aag act gat ccg tcg gac agc cag acg ggg tta      432
His Leu Val Asp Pro Lys Thr Asp Pro Ser Asp Ser Gln Thr Gly Leu
    130                 135                 140

gcg gag caa tgc gca gga ata agg aag cga cct gca acc gac gat tct      480
Ala Glu Gln Cys Ala Gly Ile Arg Lys Arg Pro Ala Thr Asp Asp Ser
145                 150                 155                 160

tct act caa aac aaa aga gcc aac aga aca gaa gaa aat gtt tca gac      528
Ser Thr Gln Asn Lys Arg Ala Asn Arg Thr Glu Glu Asn Val Ser Asp
                165                 170                 175

ggt tcc cca aat gcc ggt tct gtg gag cag acg ccc aag aag cct ggc      576
Gly Ser Pro Asn Ala Gly Ser Val Glu Gln Thr Pro Lys Lys Pro Gly
            180                 185                 190

ctc aga aga cgt caa acg taa                                         597
Leu Arg Arg Arg Gln Thr
        195

<210>  2
<211>  198
<212>  PRT
<213>  Homo sapiens

<400>  2

Met Ser Asn Val Arg Val Ser Asn Gly Ser Pro Ser Leu Glu Arg Met
1               5                  10                  15

Asp Ala Arg Gln Ala Glu His Pro Lys Pro Ser Ala Cys Arg Asn Leu
            20                  25                  30

Phe Gly Pro Val Asp His Glu Glu Leu Thr Arg Asp Leu Glu Lys His
        35                  40                  45

Cys Arg Asp Met Glu Glu Ala Ser Gln Arg Lys Trp Asn Phe Asp Phe
    50                  55                  60

Gln Asn His Lys Pro Leu Glu Gly Lys Tyr Glu Trp Gln Glu Val Glu
65                  70                  75                  80

Lys Gly Ser Leu Pro Glu Phe Tyr Tyr Arg Pro Pro Arg Pro Pro Lys
                85                  90                  95

Gly Ala Cys Lys Val Pro Ala Gln Glu Ser Gln Asp Val Ser Gly Ser
            100                 105                 110

Arg Pro Ala Ala Pro Leu Ile Gly Ala Pro Ala Asn Ser Glu Asp Thr
        115                 120                 125
```

```
His Leu Val Asp Pro Lys Thr Asp Pro Ser Asp Ser Gln Thr Gly Leu
    130                 135                 140

Ala Glu Gln Cys Ala Gly Ile Arg Lys Arg Pro Ala Thr Asp Asp Ser
145                 150                 155                 160

Ser Thr Gln Asn Lys Arg Ala Asn Arg Thr Glu Glu Asn Val Ser Asp
                165                 170                 175

Gly Ser Pro Asn Ala Gly Ser Val Glu Gln Thr Pro Lys Lys Pro Gly
            180                 185                 190

Leu Arg Arg Arg Gln Thr
        195

<210>  3
<211>  534
<212>  DNA
<213>  Mus musculus

<220>
<221>  CDS
<222>  (1)..(534)
<223>

<400>  3
atg tca aac gtg aga gtg tct aac ggg agc ccg agc ctg gag cgg atg        48
Met Ser Asn Val Arg Val Ser Asn Gly Ser Pro Ser Leu Glu Arg Met
1               5                  10                  15

gac gcc aga caa gcg gat cac ccc aag cct tcc gct tgc aga aat ctc        96
Asp Ala Arg Gln Ala Asp His Pro Lys Pro Ser Ala Cys Arg Asn Leu
            20                  25                  30

ttc ggc ccg gtg aat cat gaa gaa cta acc cgg gat ttg gag aag cac       144
Phe Gly Pro Val Asn His Glu Glu Leu Thr Arg Asp Leu Glu Lys His
        35                  40                  45

tgc cgg gat atg gaa gaa gcg agt cag cgc aag tgg aat ttt gac ttt       192
Cys Arg Asp Met Glu Glu Ala Ser Gln Arg Lys Trp Asn Phe Asp Phe
    50                  55                  60

cag aat cat aag ccc ctg gag ggc aga tac gaa tgg cag gag gtg gag       240
Gln Asn His Lys Pro Leu Glu Gly Arg Tyr Glu Trp Gln Glu Val Glu
65                  70                  75                  80

agg ggt agc ttg ccc gag ttc tac tac agg ccc ccg cgc ccc ccc aag       288
Arg Gly Ser Leu Pro Glu Phe Tyr Tyr Arg Pro Pro Arg Pro Pro Lys
                85                  90                  95

agc gcc tgc aaa gtg ctg gcg cag gag agc cag gat gtc agc ggg agc       336
Ser Ala Cys Lys Val Leu Ala Gln Glu Ser Gln Asp Val Ser Gly Ser
            100                 105                 110

ggc cag gcg gtg cct tta att ggg tct cag gca aac tct gag gac cgg       384
```

Arg Gln Ala Val Pro Leu Ile Gly Ser Gln Ala Asn Ser Glu Asp Arg
115 120 125

cat ttg gtg gac caa atg cct gac tcg tca gac aat cag gct ggg tta 432
His Leu Val Asp Gln Met Pro Asp Ser Ser Asp Asn Gln Ala Gly Leu
130 135 140

gcg gag cag tgt cca ggg atg agg aag cga cct gct gca gaa gat tct 480
Ala Glu Gln Cys Pro Gly Met Arg Lys Arg Pro Ala Ala Glu Asp Ser
145 150 155 160

tct tcg caa aac aaa agg gcc aac aga aca gaa gaa aat gtt tca gac 528
Ser Ser Gln Asn Lys Arg Ala Asn Arg Thr Glu Glu Asn Val Ser Asp
165 170 175

ggt tcc ccg aat gct ggc act gtg gag cag acg ccc aag aag ccc ggc 576
Gly Ser Pro Asn Ala Gly Thr Val Glu Gln Thr Pro Lys Lys Pro Gly
180 185 190

ctt cga cgc cag acg taa 594
Leu Arg Arg Gln Thr
195

<210> 4
<211> 197
<212> PRT
<213> Mus musculus

<400> 4

Met Ser Asn Val Arg Val Ser Asn Gly Ser Pro Ser Leu Glu Arg Met
1 5 10 15

Asp Ala Arg Gln Ala Asp His Pro Lys Pro Ser Ala Cys Arg Asn Leu
20 25 30

Phe Gly Pro Val Asn His Glu Glu Leu Thr Arg Asp Leu Glu Lys His
35 40 45

Cys Arg Asp Met Glu Glu Ala Ser Gln Arg Lys Trp Asn Phe Asp Phe
50 55 60

Gln Asn His Lys Pro Leu Glu Gly Arg Tyr Glu Trp Gln Glu Val Glu
65 70 75 80

Arg Gly Ser Leu Pro Glu Phe Tyr Tyr Arg Pro Pro Arg Pro Pro Lys
85 90 95

Ser Ala Cys Lys Val Leu Ala Gln Glu Ser Gln Asp Val Ser Gly Ser
100 105 110

Arg Gln Ala Val Pro Leu Ile Gly Ser Gln Ala Asn Ser Glu Asp Arg
115 120 125

```
His Leu Val Asp Gln Met Pro Asp Ser Ser Asp Asn Gln Ala Gly Leu
     130                 135                 140

Ala Glu Gln Cys Pro Gly Met Arg Lys Arg Pro Ala Ala Glu Asp Ser
145                 150                 155                 160

Ser Ser Gln Asn Lys Arg Ala Asn Arg Thr Glu Glu Asn Val Ser Asp
                165                 170                 175

Gly Ser Pro Asn Ala Gly Thr Val Glu Gln Thr Pro Lys Lys Pro Gly
            180                 185                 190

Leu Arg Arg Gln Thr
        195

<210>  5
<211>  534
<212>  DNA
<213>  Mustela vison

<220>
<221>  CDS
<222>  (1)..(534)
<223>

<400>  5
atg tca aac gtg cgg gtg tct aac ggg agc ccg agc ctg gag cgg atg      48
Met Ser Asn Val Arg Val Ser Asn Gly Ser Pro Ser Leu Glu Arg Met
1               5                  10                  15

gac gcc aga cag gcg gag tac ccc aag ccc tcc gcc tgc aga aac ctc      96
Asp Ala Arg Gln Ala Glu Tyr Pro Lys Pro Ser Ala Cys Arg Asn Leu
            20                  25                  30

ttc ggc ccg gtc aac cac gaa gag ctg acc cgg gac ttg gag aag cac     144
Phe Gly Pro Val Asn His Glu Glu Leu Thr Arg Asp Leu Glu Lys His
        35                  40                  45

cgc aga gac atg gaa gag gca agc cag cgc aag tgg aat ttt gat ttg     192
Arg Arg Asp Met Glu Glu Ala Ser Gln Arg Lys Trp Asn Phe Asp Phe
    50                  55                  60

cag aat cac aag ccc ctg gag ggc aaa tac gag tgg cag gag gtg gag     240
Gln Asn His Lys Pro Leu Glu Gly Lys Tyr Glu Trp Gln Glu Val Glu
65                  70                  75                  80

aag ggc agc ttg ccg gag ttc tac tac aga ccc ccg cgg cca ccc aaa     288
Lys Gly Ser Leu Pro Glu Phe Tyr Tyr Arg Pro Pro Arg Pro Pro Lys
                85                  90                  95

ggc gcc tgc aag gtg ccg gcg cag gag agc cag gac gtc agc ggg acc     336
Gly Ala Cys Lys Val Pro Ala Gln Glu Ser Gln Asp Val Ser Gly Thr
            100                 105                 110
```

```
cgg cag gcc gtg cct tta atg ggg tct cag gca aac tca gag gac aca      384
Arg Gln Ala Val Pro Leu Met Gly Ser Gln Ala Asn Ser Glu Asp Thr
        115                 120                 125

cac ttg gta gac caa aag act gac acg gcg gac aac cag gct ggc tta      432
His Leu Val Asp Gln Lys Thr Asp Thr Ala Asp Asn Gln Ala Gly Leu
    130                 135                 140

gcg gag cag tgc act ggg atc agg aag cga ccg gcc aca gac gat tcc      480
Ala Glu Gln Cys Thr Gly Ile Arg Lys Arg Pro Ala Thr Asp Asp Ser
145                 150                 155                 160

tct cct caa aac aaa aga gcc aac aga aca gaa gaa aat gtc tca gac      528
Ser Pro Gln Asn Lys Arg Ala Asn Arg Thr Glu Glu Asn Val Ser Asp
                165                 170                 175

ggt tcc                                                             534
Gly Ser
```

<210> 6
<211> 178
<212> PRT
<213> Mustela vison

<400> 6

```
Met Ser Asn Val Arg Val Ser Asn Gly Ser Pro Ser Leu Glu Arg Met
 1               5                  10                  15

Asp Ala Arg Gln Ala Glu Tyr Pro Lys Pro Ser Ala Cys Arg Asn Leu
            20                  25                  30

Phe Gly Pro Val Asn His Glu Glu Leu Thr Arg Asp Leu Glu Lys His
        35                  40                  45

Arg Arg Asp Met Glu Glu Ala Ser Gln Arg Lys Trp Asn Phe Asp Phe
    50                  55                  60

Gln Asn His Lys Pro Leu Glu Gly Lys Tyr Glu Trp Gln Glu Val Glu
65                  70                  75                  80

Lys Gly Ser Leu Pro Glu Phe Tyr Tyr Arg Pro Pro Arg Pro Pro Lys
                85                  90                  95

Gly Ala Cys Lys Val Pro Ala Gln Glu Ser Gln Asp Val Ser Gly Thr
            100                 105                 110

Arg Gln Ala Val Pro Leu Met Gly Ser Gln Ala Asn Ser Glu Asp Thr
        115                 120                 125

His Leu Val Asp Gln Lys Thr Asp Thr Ala Asp Asn Gln Ala Gly Leu
```

130 135 140

Ala Glu Gln Cys Thr Gly Ile Arg Lys Arg Pro Ala Thr Asp Asp Ser
145 150 155 160

Ser Pro Gln Asn Lys Arg Ala Asn Arg Thr Glu Glu Asn Val Ser Asp
165 170 175

Gly Ser

<210> 7
<211> 10
<212> PRT
<213> Mustela vison

<400> 7

Asn Leu Tyr Pro Leu Thr Asn Tyr Thr Phe
1 5 10

<210> 8
<211> 10
<212> PRT
<213> Mustela vison

<400> 8

Thr Asp Thr Ala Asp Asn Gln Ala Gly Leu Ala Glu Gln
1 5 10

<210> 9
<211> 10
<212> PRT
<213> Mustela vison

<400> 9

Glu Ala Val Pro Leu Met Gly Pro Gln Glu
1 5 10

<210> 10
<211> 12
<212> PRT
<213> Mustela vison

<400> 10

Leu Pro Glu Phe Tyr Tyr Arg Pro Pro Arg Pro Pro
1 5 10

<210> 11
<211> 6
<212> PRT
<213> Mustela vison

<400> 11

Tyr Glu Trp Gln Glu Val
1 5

<210> 12
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Sense primer

<220>
<221> misc_feature
<222> (1)..(20)
<223> n=a, c, g, or t

<400> 12
ccnnnayacng ayaaaycargc 20

<210> 13
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Artisense primer

<220>
<221> misc_feature
<222> (1)..(24)

<223> n=a, c, g, or t

<400> 13
nnnrytgrtnr tcngcngtrt cngt 24

<210> 14
<211> 20
<212> DNA
<213> Artificial Sequence
<220>
<223> Sense primer

<220>
<221> misc_feature
<222> (1)..(20)
<223> n=a, c, g, or t

<400> 14
tgrscngtnc cnctnatngg 20

<210> 15
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Sense primer

<220>
<221> misc_feature
<222> (1)..(20)
<223> n=a, c, g, or t

<400> 15
nargngtnic cnttratggg 20

<210> 16
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Antisense primer

<220>
<221> misc_feature
<222> (1)..(21)
<223> n=a, c, g, or t

<400> 16
nccccatnagn ggnacngcyt g 21

<210> 17
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Antisense primer

<220>
<221> misc_feature
<222> (1)..(21)
<223> n=a, c, g, or t

<400> 17
nrrrrtyaan ggnacngcyt g 21

<210> 18
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Sense primer

<220>
<221> misc_feature
<222> (3)..(3)
<223> n=a, c, g, or t

<400> 18
ccngarttyt aytaymg 17

<210> 19

<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Antisense primer

<220>
<221> misc_feature
<222> (1)..(15)
<223> n=a, c, g, or t

<400> 1[illegible]
[illegible]rtartara aytcngg 17

<210> [illegible]
<211> 1[illegible]
<212> DNA
<213> Artificial Sequence

<220>
<223> Sense primer

<400> [illegible]
[illegible]ygartg[illegible]c argargt 17

<210> [illegible]
<211> 1[illegible]
<212> DNA
<213> Artificial Sequence

<220>
<223> Antisense primer

<220>
<221> misc_feature
<222> (1)..(1)
<223> n=a, c, g, or t

<400> [illegible]
nacy[illegible]cy[illegible]c caytcrta 18

<210> [illegible]
<211> [illegible]
<212> PRT
<213> Homo sapiens

<400> [illegible]

Leu Phe Gly Pro Val Asn
1 5

<210> [illegible]
<211> 6
<212> PRT
<213> Homo sapiens

<400> 2[illegible]

Leu Ser Gln Pro Val Asn

1 5

<210> 24
<211> 164
<212> PRT
<213> Homo sapiens

<400> 24

Met Ser Glu Pro Ala Gly Asp Val Arg Gln Asn Pro Cys Gly Ser Lys
1 5 10 15

Ala Cys Arg Arg Leu Phe Gly Pro Val Asp Ser Glu Gln Leu Ser Arg
20 25 30

Asp Cys Asp Ala Leu Met Ala Gly Cys Ile Gln Glu Ala Arg Glu Arg
35 40 45

Trp Asn Phe Asp Phe Val Thr Glu Thr Pro Leu Glu Gly Asp Phe Ala
50 55 60

Trp Glu Arg Val Arg Gly Leu Gly Leu Pro Lys Leu Tyr Leu Pro Thr
65 70 75 80

Gly Pro Arg Arg Gly Arg Asp Glu Leu Gly Gly Gly Arg Arg Pro Gly
85 90 95

Thr Ser Pro Ala Leu Leu Gln Gly Thr Ala Glu Glu Asp His Val Asp
100 105 110

Leu Ser Leu Ser Cys Thr Leu Val Pro Arg Ser Gly Glu Gln Ala Glu
115 120 125

Gly Ser Pro Gly Gly Pro Gly Asp Ser Gln Gly Arg Lys Arg Arg Gln
130 135 140

Thr Ser Met Thr Asp Phe Tyr His Ser Lys Arg Arg Leu Ile Phe Ser
145 150 155 160

Lys Arg Lys Pro

<210> 25
<211> 6
<212> PRT
<213> Homo sapiens

<400> 25

Leu Phe Gly Pro Val Asp
1 5

<210> 26
<211> 11
<212> PRT
<213> Mammalian

<400> 26

Asn Leu Phe Gly Pro Val Asn His Glu Glu Leu Thr Arg

1 5 10

<210> 27
<211> 13
<212> PRT
<213> Homo sapiens

<400> 27

Asn Leu Phe Gly Pro Val Asp His Glu Glu Leu Thr Arg
1 5 10